



# UNITED STATES PATENT AND TRADEMARK OFFICE

TEL

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/917,314	07/27/2001	Vivek Kashyap	BEA920010015US1	9560
23441	7590	07/27/2005	EXAMINER	
LAW OFFICES OF MICHAEL DRYJA 704 228TH AVENUE NE PMB 694 SAMMAMISH, WA 98074			KHUONG, LEE T	
			ART UNIT	PAPER NUMBER
			2665	

DATE MAILED: 07/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/917,314

Applicant(s)

KASHYAP, VIVEK

Examiner

Lee Khuong

Art Unit

2665

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Regarding claim 1**, in page 2, line 11-12, is recited for applicant's convenience, "one or more hidden output ports to receive an expanded port range from an assigning manager component". It is not clear how the hidden output ports to receive an expanded port range from an assigning manager. Please provide a further explanation.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-4, 8 and 10-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Huang et al. (US 6,308,282), hereafter is referred as Huang.

**Regarding claim 1**, Huang teaches an Apparatus and Method For Providing Fault Tolerance Of Networks And Network Interface Cards. The system comprises at least one of: a manager component (250, Fig. 2, *a manager node*) of a network having programmed herein alternate routes for a destination address, such that upon failure of a first node (120I, Fig. 1B) of the network to which the destination address is initially routed, the manager component selects one of the alternate routes to route the destination address to a second node (120J, Fig. 1B) of the network (see col. 3, lines 6-23 and col. 7, line 10 – col. 9, line 29, and col. 14, lines 39-54, *Failure Recovery Channel Swap Mode*);

a first switch (240A1, Fig. 1B) of the network having a port for each of at least a third (120K, Fig. 1B) and a fourth (120X, Fig. 1B) node of the network, such that upon failure of the third node, the first switch remaps a destination address initially mapped to the port for the third node to the port for the fourth node (see col. 7, line 10 – col. 9, line 29 and col. 17, lines 28-44, *a manager node detects a failure of an active channel and updates/remaps the MAC address mapping table of the NIC switch to indicate that future communication should be directed to STANDBY node's address*); and

a second switch (240B1, Fig. 1B) of the network having an input port for each of at least a fifth (120Y, Fig. 1B) and a sixth (120Z, Fig. 1B) node of the network, and a visible output port (170A, Fig. 2, *a logical active port, the logical port is visible since an application packet only knows and communicates with a virtual ip, which is associating with the logical active port. The application packet does not know all the stand-by/hidden ports within a stand-by group that can be failed-over when there is a failure in the active path*), and one or more hidden output ports (170B, Fig. 2, *the stand-by group*) to receive an expanded port range (170Bs, Fig.

Art Unit: 2665

1B, *the stand-by ports of nodes 120I-120Z*) from an assigning manager component (see col. 14, lines 39—54), such that upon failure of fifth node, the second switch uses the expanded port range to remap a destination address initially mapped to the input port for the fifth node to the input port for the sixth node (see col. 17, lines 28-44).

**Regarding claim 2**, Huang teaches all claimed limitations set forth in the rejection of claim 1. Huang further teaches wherein the alternate routes travel through the network via one or more switches (see col. 7, lines 21-52, *the application packet routing for destination of node 120I can be routed through a first switch 240A1, path/bus 130A, port 170A or the alternate route via a second switch 240B1, path/bus 130B, port 170B*).

**Regarding claim 3**, Huang teaches all claimed limitations set forth in the rejection of claim 1. Huang further teaches wherein the first switch maintains one or more internal tables in which the destination address initially mapped to the port for the third node and remapped to the port for the fourth node upon failure of the third node is stored (see col. 14, lines 17-38 and col. 17, lines 11-44).

**Regarding claim 4**, Huang teaches all claimed limitations set forth in the rejection of claim 1. Huang further teaches wherein the second switch maintains one or more internal tables in which the destination address initially mapped to the input port for the fifth node and remapped to the input port for the sixth node is stored (see col. 14, lines 17-38 and col. 17, lines 11-44).

**Regarding claim 8**, it is inherently that each port within a switch has a port ID (*LID*).

**Regarding claim 10**, it is inherently that each node 120 in Fig. 1B comprises at least a channel adapter, (CA) to be connected to the switches 240.

**Regarding claims 11 and 16**, Huang teaches an Apparatus, Article and a Method For Providing Fault Tolerance Of Networks And Network Interface Cards. The article and method comprise: routing a destination address over an initial path to a first node (120I, Fig. 1B) connected to a first port (*the port that connects the bus 130A between switch 240A1 and node 120I in Fig. 1B*) on a switch (240A1, Fig. 1B, see col. 3, lines 6-23 and col. 7, line 10 – col. 9, line 29, and col. 14, lines 39-54), the destination address initially mapped to the first port on the switch (see col. 3, lines 6-23 and col. 7, line 10 – col. 9, line 29, and col. 14, lines 39-54); and, upon failure of the first node (see col. 3, lines 6-23 and col. 7, line 10 – col. 9, line 29, and col. 14, lines 39-54), performing an action for a second node (120J, Fig. 1B) to failover for the first node selected from the group (120I – 120Z, Fig. 1B) essentially consisting of: routing the destination address over an alternate path to the second node selected by a manager component (250, Fig. 2, *a manager node*) (see col. 3, lines 6-23 and col. 7, line 10 – col. 9, line 29, and col. 14, lines 39-54); and, remapping the destination address from the first port on the switch to a second port on the switch connected to the second node (see col. 7, line 10 – col. 9, line 29 and col. 17, lines 28-44, *a manager node detects a failure of an active channel and updates/remaps*

Art Unit: 2665

*the MAC address mapping table of the NIC switch to indicate that future communication should be directed to STANDBY node's address).*

**Regarding claims 12 and 17,** Huang teaches all claimed limitations set forth in the rejection of claims 11 and 16. Huang further teaches initially comprising: programming the alternate path in the manager component (250, Fig. 2, *the manager node*, see col. 3, lines 6-23 and col. 7, line 10 – col. 9, line 29, and col. 14, lines 39-54).

**Regarding claims 13 and 19,** Huang teaches all claimed limitations set forth in the rejection of claims 11 and 16. Huang further teaches initially comprising receiving by the switch of an expanded port range (170Bs, Fig. 1B, *ports within a stand-by group of nodes 120I-120Z*) from an assigning manager component due to the switch having one or more hidden output ports in addition to a visible output port (170A, Fig. 2, *a logical active port, the logical port is visible since an application packet only knows and communicates with the virtual ip, which is associating with the logical active port. The application packet does not know all the stand-by/hidden ports within the stand-by group that can be failed-over when there is a failure in the active path*) (see col. 14, lines 39—54).

**Regarding claim 14,** Huang teaches all claimed limitations set forth in the rejection of claim 11. Huang further teaches maintaining one or more internal tables by the switch in which the destination address is initially mapped to the first port on the switch (see col. 14, lines 17-38 and col. 17, lines 11-44).

**Regarding claim 15**, Huang teaches all claimed limitations set forth in the rejection of claim 11. Huang further teaches remapping the destination address comprises remapping the destination address internally by the switch (see col. 14, lines 17-38 and col. 17, lines 11-44).

**Regarding claim 18**, Huang teaches all claimed limitations set forth in the rejection of claim 16. Huang further teaches the computer-readable medium is located in a switch having the first (170A, Fig. 3A) and the second ports (170B, Fig. 3A), such that the means in the medium is for remapping the destination address from the first port to the second port (see col. 9, lines 30-61, *NIC to NIC failover*).

**Regarding claim 20**, Huang teaches all claimed limitations set forth in the rejection of claim 16. Huang also teaches the medium is one of a recordable data storage medium (see col. 5, lines 27-32) and a modulated carrier signal (see col. 5, lines 1-12).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang in view of Cao (US 6,618,371).

**Regarding claim 5**, Huang teaches all claimed limitations set forth in the rejection of claim 1. Huang does not expressly teach wherein the first switch comprises a first sub-switch and a second sub-switch.

Cao teaches a first switch (72, Fig. 7) comprises a first sub-switch (74A, Fig. 7) and a second sub-switch (74B, Fig. 7) (see col. 10, lines 44-65, *fault-tolerance switching*).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to employ the redundant switch as taught by Cao into Huang to arrive the claimed invention as specified in claim 5.

The suggestion/motivation for doing so would have been to provide a redundant and fault-tolerance switching network (see col. 1, line 65 – col. 2, line 7 and col. 2, lines 22-51).

**Regarding claim 6**, Huang teaches all claimed limitations set forth in the rejection of claim 1. Huang does not expressly teach the second switch comprises a first sub-switch and a second sub-switch.

Cao teaches the second switch (73, Fig. 7) comprises a first sub-switch (74I, Fig. 7) and a second sub-switch (74Z, Fig. 7) (see col. 10, lines 44-65, *fault-tolerance switching*).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to employ the redundant switch as taught by Cao into Huang to arrive the claimed invention as specified in claim 5.

The suggestion/motivation for doing so would have been to provide a redundant and fault-tolerance switching network (see col. 1, line 65 – col. 2, line 7 and col. 2, lines 22-51).

Art Unit: 2665

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Huang in view of Shah et al. (US 6,694,361), hereinafter is referred as Shah.

**Regarding claim 7.** Huang teaches all claimed limitation set forth in the rejection of claim 1. Huang does not expressly teach the manager component and the assigning manager component each comprise a subnet manager (SM).

Shah teaches the manager component and the assigning manager component each comprise a subnet manager (SM) (see col. 9, lines 13-42, *standard requirement of infiniband*)

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to employ the infiniband technology as taught by Shah into Huang to arrive the claimed invention as specified in claim 7.

The suggestion/motivation for doing so would have been to provide a redundant and fault-tolerance channel adapter (see col. 6, line 59 – col. 7, line 41).

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Huang in view of Shah and further in view of Bolt (US 6,766,412).

**Regarding claim 9,** Huang teaches all claimed limitation set forth in the rejection of claim 1. Huang does not teach the expanded port range comprises an expanded location identifier (LID) mask count (LMC) range.

Art Unit: 2665

Shah teaches the expanded port range (*device interfaces using infiniband bus technology*) comprises an expanded location identifier (LID) (see col. 7, lines 23-27 and col. 8, lines 42-55, *a clustered of virtual ports within a physical port. Each virtual port is assigned a unique address/LID by a subnet manager. Infiniband basic principal comprises a clustered of virtual ports for providing redundancy, fault-tolerance, alternated path purposes and most used in SAN/Fabric switch*).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to employ the infiniband technology as taught by Shah into Huang to partially arrive the claimed invention as specified in claim 9.

The suggestion/motivation for doing so would have been to provide a redundant and fault-tolerance channel adapter (see col. 6, line 59 – col. 7, line 41).

Huang and Shah do not expressly teach a mask count (LMC) range for the expanded LID.

Bolt teaches using a mask count range for the assigned virtual port ID (see col. 16, lines 38-50, col. 17, line 54 – col. 18, line 26, *mask range to identify virtual ports in Infiniband interfaces*).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to employ the infiniband technology as taught by Bolt into Huang and Shah to arrive the claimed invention as specified in claim 9.

The suggestion/motivation for doing so would have been to provide redundant, fault-tolerance and reliable infiniband interfaces (see col. 2, lines 58-62).

***Response to Arguments***

9. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gronke (US 6,888,792) is cited to show a system and method of Network Node Failover Using Path Rerouting By Manager Component or Switch Port Remapping, which is considered pertinent to the claimed invention.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lee Khuong whose telephone number is 571-272-3157. The examiner can normally be reached on 9AM - 5PM.

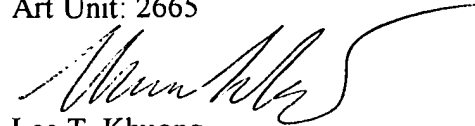
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on 571-272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

12. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 09/917,314

Page 12

Art Unit: 2665



Lee T. Khuong

Examiner

Art Unit 2665



HUY D. VU  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600